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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/918,438	08/01/2001	Yukio Michishita	234824/00	4751
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21254 7590 01/12/2005

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EXAMINER

LEUNG, CHRISTINA Y

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/918,438	Applicant(s) MICHISHITA ET AL.	
	Examiner Christina Y. Leung	Art Unit 2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 20 August 2004.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 1-5,7-11 and 17-20 is/are allowed.
- 6) Claim(s) 6 and 12-16 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites a “method” in the preamble of the claim, but subsequently recites “means for transmitting” in line 7 of the claim. Therefore, it is unclear whether the claim recites a method or an apparatus. Claim 13 depends on claim 6 and is also indefinite for the above reason.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 14 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakajima et al. (US 6,522,803 B1).

Regarding claim 14, Nakajima et al. disclose a method of optically transmitted n channels on a transmission line in a wavelength division multiplexing optical transmission system (Figure 14), n being an integer equal to or greater than 4, the method comprising:

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determining whether any of the n channels does not currently carry an optical signal (by branching off channels using couplers 111 and detecting them in supervision and control portion 100); and

compensating for the channels not currently carrying an optical signal by inserting at least one control light signal to be transmitted on the transmission line (with dummy light sources 61), wherein the at least one control light signal has a wavelength of one of the n channels (the dummy light sources correspond to wavelengths of the n channels; column 9, lines 12-19).

Regarding claim 16, Nakajima et al. disclose:

separating the n channels into a plurality of groups of channels each group having x channels; and

providing a control light for each group of channels to compensate for missing channel data in any of the channels in the group.

Claim 16 only recites separating the n channels into a plurality of groups of x channels but does not further define the groups of channels. Nakajima et al. disclose “separating the n channels” into groups of x channels each comprising the group of channels having the same wavelength (one group comprises the λ_0 channels in output links 1-4, another group comprises the λ_1 channels in output links 1-4, etc.; see Figure 14, for example). Nakajima et al. also disclose providing a control light corresponding to λ_0 , λ_1 , etc. for each group of channels to compensate for missing channel data in any of the channels in the group.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. in view of Okano et al. (US 6,449,074 B1).

Regarding claim 15, Nakajima et al. disclose an optical transmission method as discussed above with regard to claim 14, including an optical transmission line (such as output link 1 in Figure 14) on which a signal light and an at least one control light are propagated. Nakajima et al. further disclose that the transmission line is regulated by an optical post-amplifier such as shown in Figure 14.

They do not specifically disclose that the optical transmission line is balanced to have a flat frequency characteristic when all of the n channels has an optical signal being transmitted therein.

However, Okano et al. in particular teach optical amplification with level control in a wavelength division multiplexed system (Figure 2) such as already described by Nakajima et al. They further specifically suggest that the wavelength characteristic is flat when a set of signal lights having different wavelengths is input to the amplifier (column 5, lines 61-65).

It would have been obvious to a person of ordinary skill in the art to provide a flat wavelength characteristic such as taught by Okano et al. in the method disclosed by Nakajima et al. in order to provide the same level of amplification/gain to each channel regardless of

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wavelength in order to treat the input channels equally. One in the art would have been particularly motivated to combine the teachings of Okano et al. with the system described by Nakajima et al. to prevent any one channel to be arbitrarily amplified at a different ratio since the method already disclosed by Nakajima et al. is specifically concerned with regulating the power level of multiple channels transmitted together on a transmission line.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita (US 6,426,817 B1) in view of Nakajima et al.

Regarding claim 12, as similarly discussed above with regard to claim 7, Tomita discloses a wavelength division multiplexing optical transmission system (Figure 3), the system comprising:

one or more input signal light transmitters that respectively transmit a signal light (not explicitly shown in Figure 3, although the figure shows signal lights λ_1 - λ_{16} , but a transmission unit is disclosed in column 2, lines 52-55; Figure 6 also shows optical transmitters labeled "OS");

a first optical multiplexer (WDM coupler 20) provided with pieces of signal light input ports connected respectively to outputs of x of one or more input signal light transmitters;

an optical branching device (coupler 23) that branches light output from the first optical multiplexer;

a control light transmitter (light source 25) that transmits a control light based upon the level of the branched light from the optical branching device (column 5, lines 17-20);

a second optical multiplexer (coupler 21) that multiplexes light output from the first optical multiplexer 20 and the control light;

an optical transmission line on which multiplexed light output from the second optical multiplexer is propagated (not explicitly shown in Figure 3, but a transmission line connected to the system is clearly indicated in the figure).

Although Tomita discloses that the system transmits at least 4 signal lights (Figure 3 shows 16 signal lights, for example) and that the first multiplexer includes a plurality of input ports to accommodate them, Tomita does not specifically disclose that the system transmits “n (n: 4 or a larger integer) pieces of signal lights” while the multiplexer is provided with less than n pieces of signal light input ports. However, large networks including multiple groups of wavelengths multiplexed by separate multiplexers and transmitted on separate transmission lines are well known in the art. In particular, Nakajima et al. teach a wavelength division multiplexed system, related to the one disclosed by Tomita, including means for transmitting control light 61 to compensate for regular signal wavelengths that may not be present on the transmission line (Figures 3, 11, and 13). Nakajima et al. further teach that the system includes a plurality of signal lights, only some of which are connected to a first multiplexer (Figure 13 shows details of routing portion 2 in Figure 11 and shows several multiplexers 107, one of which may be a first multiplexer).

It would have been obvious to a person of ordinary skill in the art to specifically input only some of the total plurality of signal lights into a first multiplexer as suggested by Nakajima et al. in the system disclosed by Tomita so that the system can accommodate many signals on multiple transmission lines that can eventually transmits various signals in different directions to multiple destinations. In other words, Nakajima et al. generally suggest that the system disclosed by Tomita may be expanded into a system having more than one group of wavelength division

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multiplexed signals so that more users are ultimately connected together in the communication network..

Tomita does not further disclose demultiplexer and optical receivers, but it is also well known in the art that signals that are wavelength division multiplexed such as already disclosed by Tomita may be eventually demultiplexed and received by optical receivers. Nakajima et al. in particular also teaches that multiplexed signals transmitted on a transmission line may be thusly recovered (for example, Figures 14 and 15 show demultiplexer 11 connected to input link 1 and link 1 optical receiver 101 which recovers a plurality of signals). Again, it would have been obvious to a person of ordinary skill in the art to include a demultiplexer and optical receivers as suggested by Nakajima et al. in the system disclosed by Tomita simply so that the information contained in the signals is actually recovered at a communication destination.

Further regarding claim 12, Tomita further disclose that the control light transmitter 25 outputs a control light having power equivalent to difference between the a current level of branched light from the branching device and a level of branched light from the braching device when all x signal lights are present (column 4, lines 63-66). Tomita does not specifically suggest that the control light has the same wavelength as that of a signal light last transmitted from the transmitters output from the first multiplexer.

However, Nakajima et al. teach that a control light may have the same wavelength as that of a signal light last transmitted from the pieces of signal light transmitters corresponding to the control light transmitter, since they disclose that the control light may have the same wavelength as a regular signal light not currently used and thereby replace that signal light (column 9, lines 31-34). Nakajima et al. further teach that the control light may be modulated (column 9, lines 16-

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17), in which case a control signal having a same wavelength as a regular signal light may convey data in the system and be easily received by an optical receiver already in place for receiving the regular signal under normal conditions (column 13, lines 1-30). Examiner notes that Tomita also discloses that providing a control light with the same wavelength as that of a regular signal light last transmitted is already generally known (column 2, lines 15-19).

It would have been obvious to a person of ordinary skill in the art to have a control light be a same wavelength as that of a signal light last transmitted from the pieces of signal light transmitters as suggested by Nakajima et al. in the system disclosed by Tomita in order to use the control light to provide diagnostic information in a way that is conveniently received by an existing optical receiver if desired.

Allowable Subject Matter

8. Claims 1-5, 7-11, and 17-20 are allowed.
9. Claims 6 and 13 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.
10. The following is a statement of reasons for the indication of allowable subject matter:

The prior art, including Nakajima et al., Okano et al., and Tomita do not specifically disclose or fairly suggest a wavelength division multiplexing transmission system or method including all the limitations, elements and/or steps as recited in claims 1, 7, and 17, particularly wherein n channels are grouped into groups each having x channels ($2 \leq x < n$) and for each group, a control light is transmitted to provide a same power level as a total power of any signal lights not received in that group.

Examiner notes that although Applicants have asserted on page 10 of their response that “It is noted that the claim amendments are made only for more particularly pointing out the invention and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability,” the claims *are* materially different than the previous claims. The amendments to claims 1 and 7 have more clearly recited or added certain limitations (such as transmitting a control light to provide a same power level as a total power of signal lights not received in the group *for each group*) in the claims such that the claims overcome the previous rejections over Nakajima et al. and Tomita. Claim 6 also appears to have allowable subject matter for this reason, although it has been rejected under 35 U.S.C. 112, second paragraph.

Response to Arguments

11. Applicants’ arguments filed 20 August 2004 with regard to claim 12 have been fully considered but they are not persuasive.

12. Regarding claims 7-12, Applicants have asserted that “there is no separation in Tomita of the n input channels into groups, each having x channels, and each group having its own control light. Therefore, in Tomita there is no first multiplexer associated with each of the groups and a second multiplexer that receives inputs from the first multiplexers” on page 13 of their response. However, Examiner respectfully notes that unlike in amended claim 7, claim 12 does not specifically recite that n pieces of signal light are controlled in a plurality of subsets or groups. The claim recites “a first optical multiplexer provided with x pieces of signal light,” not a plurality of such multiplexers, and recites that “ n ” pieces may be generally transmitted in the system only in the preamble of the claim. Therefore, in response to applicants’ argument that the

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references fail to show certain features of applicant's invention, it is noted that the features upon which applicants rely (i.e., a first multiplexer associated with each of a plurality of groups, or each group having its own control light) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

13. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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